

REMARKS/ARGUMENTS

Claim Status

Claims 1-11 are canceled without prejudice. Claims 12-19 are added. Claims 12-19 find support in original claims 1-11. No new matter has been added.

Rejections

Claim 1 is rejected under 35 U.S.C. 112, second paragraph for being incomplete. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 103(a) as being obvious over Yanagase (JP 0916554) in view of Fuji (U.S. 2002/0134026). Claim 4 is rejected under 35 U.S.C. 103(a) as being obvious over Yanagase in view of Greigger (U.S. Patent No. 4,435,219). Claim 11 is rejected under 35 U.S.C. 103(a) as being obvious over Yanagase in view of Fuji as applied to claims 1-3 and 5-10 above, and further in view of Kanomori (JP 2001-11379). Claims 1-11 have been canceled. Applicants request withdrawal of these rejections.

The present invention provides for a coating composition which, when applied to a product, produces a transparently coated article having high stain-resistance, improved weather resistance and improved coating elongation. Specifically, the present invention comprises a combination of a specific anionic surfactant and nonionic surfactant. When an aqueous emulsion coating material comprising said combination is formed to be a coating, colloidal silica dispersed in the aqueous coating material selectively comes up to the surface layer of the coating (*See* paragraph [0036] of the specification). As a result, the colloidal silica fills up thickly the interstice of the polymer particles of the coating component at a coating surface layer and then an area of the colloidal silica exposed at a coating surface occupies 70% or more of the coating surface. Not only are these results not disclosed in the prior art, but they are also unexpected (*See* attached 37 C.F.R. §1.132 declaration).

The above coating component, wherein the area of colloidal silica exposed at a coating surface occupies 70% or more of the coating surface, improves formability, weather resistance, water resistance, and freeze-thaw resistance, while the colloidal silica provides stain-resistance, anti-static properties, hardness, and weather resistance to said coating (*See* Specification; [0022-24]).

Yanagase and Fuji do not disclose a combination of a specific anionic surfactant as claimed (such as a sulfate salt of polyoxyalkylene aryl ether, a sulfate salt of polyoxyalkylene alkylaryl ether, a formalin condensate of a sulfate salt of polyoxyalkylene aryl ether, or a formalin condensate of a sulfate salt of polyoxyalkylene alkylaryl ether, or mixtures thereof), and a nonionic surfactant. Yanagase discloses anionic emulsifiers (pg. 7, [0053]), but does not disclose the addition of other components to ensure that the area of exposure of colloidal silica on the surface of the coating is 70% (Official Action; pg. 3, line 23 - pg. 4, line 3). Fuji discloses that “a curing agent for curing the organic-inorganic composite polymer resin, for example an organic metal solution such as a tin compound, may be mixed in the coating agent, and a dispersing agent for dispersing the colloidal silica particles, for example a nonionic surfactant, may also be mixed in the coating agent” (pg. 4, [0076]). However, neither Yanagase or Fuji disclose a combination of the specific anionic and nonionic emulsifiers (surfactants) claimed. Furthermore, neither Yanagase or Fuji suggest that anionic and nonionic emulsifiers can selectively disperse colloidal silica to the surface of the coating. Accordingly, the combination of these two references is not sufficient to render *prima facie* obvious the claimed invention.

With respect to the secondary references, Greigger discloses compositions comprising dispersions of colloidal silica, water and alkoxysilanes (col. 2, lines 3-8). Greigger further discloses that alcohols useful in said compositions typically include lower aliphatic alcohols, ethanol, isopropanol, and tertiary-butanol, with isopropanol being preferred. In addition,

mixtures of such alcohols can be utilized, and when mixtures of alcohols are used, it is preferred that at least 50 weight percent of isopropanol be present in such a mixture (col. 4, lines 35-42). Greigger fails to disclose a coating composition of the present invention comprising colloidal silica exposed at a coating surface wherein the colloidal silica occupies 70% or more of the coating surface.

Kanamori discloses a coating composition for under coatings comprising organosilane, or hydrolysate or condensate thereof; a polymer containing silicon atom connected with hydrolysable group and/or hydrogen group, and colloidal silica and/or colloidal alumina (claim 2). However, Kanamori also fails to disclose a coating composition of the present invention comprising colloidal silica exposed at a coating surface wherein the colloidal silica occupies 70% or more of the coating surface.

Accordingly, even if Greigger and Kanamori were combined with Yanagase and Fuji, the coating composition of the present invention having an area of the colloidal silica exposed at a coating surface wherein the colloidal silica occupies 70% or more of the coating surface would not be obtained. Thus, the Office has failed to establish a *prima facie* case of obviousness.

Furthermore, even if a *prima facie* case of obviousness were established, which it has not, the attached 37 C.F.R. § 1.132 Declaration demonstrates that the effect of the specific anionic and nonionic surfactant claimed (colloidal silica distributed in the aqueous coating material is selectively floated up to the surface layer of the coating) could not have been expected by a person having ordinary skill in the art, which is sufficient to rebut the same. In addition, Examples 21-23 of the present invention illustrate the deficiency of not combining the anionic surfactant with a nonionic surfactant (Tables 1 and 2). Evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. "Evidence that a compound is

unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.” No set number of examples of superiority is required. *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987).” As can be observed in the attached 1.132 declaration, additional experimentation has been performed to provide comparative examples illustrating the difference between the area of the colloidal silica exposed at the coating surface when the specific anionic surfactant and nonionic surfactants are used in a combination in the present invention and when no-specific surfactants are used.

Specifically, Examples 1-20 of the present specification illustrate the occupied area of the colloidal silica exposed at a coating surface being from 74 to 99% when the specific anionic surfactant and nonionic surfactants are used in a combination (see Tables 4 of the present invention. Applicants note that Examples 21-23 do not comprise a nonionic surfactant and thus no longer fall within the scope of the claims). In contrast, Additional Comparative Examples 1 and 2 in the attached Declaration, formed without the claimed anionic surfactant and nonionic surfactants, have only 25% and 22%, respectively, of the coating surface area occupied with colloidal silica (1.132 Declaration). Specifically, “LATEMULE E-118B” (sodium polyoxyethylene alkyl ether sulfate, manufactured by Kao Corporation) was used in Additional Comparative Example 1 and “PELEX OT-P” (sodium dialkyl sulfosuccinate, manufactured by Kao Corporation) was used in Additional Comparative Example 2. The former does not have an aryl parting a molecule, so it does not meet the limitations of the anionic surfactant of claims 12 and 13. The latter does not have a polyoxyethylene part nor an aryl part, so it also does not meet the limitations of the anionic surfactant of claims 12 and 13. When these anionic surfactants which do not meet the limitations of the present claims were used in combination with a nonionic surfactant, areas of the colloidal silica exposed at the coating surface were only 25% and 22% respectively. Thus, the high exposure of colloidal silica on the coating surface obtained according to the

specific anionic surfactant in combination with nonionic surfactant of the claimed invention is unexpected in view of these results (*See* 1.132 Declaration; para. 3).

Applicants further note that due to the low exposure of colloidal silica at the coating surface of Additional Comparative Examples 1 and 2, the water contact angles of said coatings were large and stain-resistance was not shown.

Thus, the data in the 1.132 Declaration clearly illustrates the unexpected difference between the area of the colloidal silica exposed at the coating surface when the specific anionic surfactant and nonionic surfactants are used in a combination in the present invention and when no-specific surfactants are used. Furthermore, as discussed in the Response filed February 26, 2010, the claimed coating composition comprising a polymer and colloidal silica, wherein the area of colloidal silica exposed at a coating surface occupying 70% or more of the coating surface, provides for significant differences in stain resistance, water contact angle, and anti-static properties, which is enough to rebut a *prima facie* case of obviousness.

In addition, Examples 21-23 of the present invention illustrate the deficiency of not combining the anionic surfactant with a nonionic surfactant (Tables 1 and 2). Specifically, when anionic surfactants were used in the absence of a nonionic surfactant, the static properties and stain resistance were decreased.

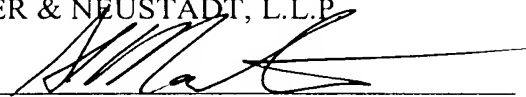
Applicants submit that the results demonstrated in these comparisons clearly illustrate that, even if a *prima facie* case of obviousness can be established, Applicants demonstration is sufficient to rebut the same.

Conclusion

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the rejections and passage of this case to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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